

Remarks

The Office Action mailed October 28, 2005 has been carefully reviewed and the following remarks are made in consequence thereof.

Claims 1-20 are now pending in this application. It is respectfully submitted that the pending claims define allowable subject matter.

The rejection of Claims 1-20 under 35 U.S.C. § 102(b) as being unpatentable over Gold (U.S. Patent No. 6,154,109) is respectfully traversed.

Gold is cited in the Office Action as disclosing a monolithic core structure (300) having a plurality of magnetic layers (312), (316) and at least one nonmagnetic layer (308) separating the magnetic layers from one another. It is respectfully submitted, however, that Gold discloses no such thing, and that there are a number of differences between the claimed invention and the disclosure of Gold.

As explained by the Federal Circuit, the requirements of Section 102, which is generally referred to as "anticipation", requires a disclosure in a single piece of prior art of each and every limitation of a claimed invention. Apple Computer, Inc. v. Articulate Systems, Inc., 57 USPQ2d 1057, 1061 (Fed. Cir. 2000). A finding of anticipation requires that the publication describe all of the elements of the claims arranged as in the patented device. C.R. Bard, Inc. v. M3 Systems, Inc., 48 USPQ2d 1225, 1320 (Fed. Cir. 1998). The present rejection of claims 1-20 appears to overlook clearly recited elements of the claims, and Gold it is submitted that Gold discloses a different arrangement of features than the recitations of the claims as discussed below.

Claim 1 recites a magnetic component comprising "a first monolithic core structure comprising a plurality of magnetic layers and at least one nonmagnetic layer separating one of said plurality of magnetic layers from another of said plurality of magnetic layers, and a first opening extending through said first core structure," and "a

conductive element establishing a conductive path through said first opening, wherein said at least one nonmagnetic layer separates said conductive element from one of the magnetic layers.”

Gold discloses a superconducting inductor having a high permeability core (300) selected for superior properties at cryogenic temperatures. As explained by Gold, ferrite materials, that Applicants specifically refer to in paragraph [0026] for the magnetic media of the recited magnetic layers, are “not suitable” for the Gold core due to limited temperature stability, and instead distributed air gap core materials having powdered iron and resin binder are “preferred” in the inductor manufacture of the core. *See* Gold col. 6, lines 46-66. Applicants submit, and as those in the art will not doubt appreciate, Gold therefore disclose a core fabricated from a composite material that eliminates a discrete gap structure to which the present invention is directed. Applicants therefore respectfully submit that Gold discloses a fundamentally different type of core structure than the present invention, and that Gold actually teaches away from the present invention.

Gold does not disclose a core having magnetic layers and at least one nonmagnetic layer separating the magnetic layers. The distributed gap core material is not properly characterized as magnetic layers separated by nonmagnetic layers, as the powdered magnetic material and insulating material of the distributed gap material is mixed on a particle level, and is not arranged in layers. Gold describes a powder core structure having insulating particles separating magnetic particles within the material, thereby eliminating the need for a discrete gap in the structure. Indeed, Gold specifically refers to problems associated with cores having “high reluctance air gaps” (*see* Gold col. 1, lines 47-62) and states that distributed gap cores can be used to solve such problems. Gold’s assertion that the air gaps (308) “will not substantially affect operation of the invention” (*see* Gold col. 7, lines 8-10) indicates that the air gaps (308) are not provided to provide any nonmagnetic effect on the core structure (300). In the gapped core

structure to which the present invention relates, the nonmagnetic layer is essential to the proper operation of the component.

Additionally, Gold further explains that the core includes pieces of core material (312), (314), (316), (318) that are strung on a winding (304). Because the Gold core (300) is fabricated from powdered distributed gap materials in multiple pieces, the Gold core (300) is not a monolithic structure. Additionally, Gold notes that the pieces (312), (314), (316), (318) may be “in commercially available sizes and configurations.” *See* Gold Col. 7, lines 5-8. Nowhere, however, does Gold state that the pieces (312), (314), (316), (318) are provided in layers, and as illustrated in the Figures, the core pieces (312), (314), (316), (318) are C-shaped and not fairly characterized as “layers” of material. It is apparent that the Gold air gaps (308) are a consequence of the core (300) being assembled from separate and independent pieces (312), (314), (316), (318) as opposed to being functional, nonmagnetic features of the core structure.

Applicants also note that claim 1 recites a monolithic core structure having magnetic layers, at least one nonmagnetic layer, and a first opening extending through the core structure. Not only are the Gold air gaps (308) submitted not to be a monolithic part of the core pieces (312), (314), (316), (318), but it is submitted that an opening as recited in claim 1 cannot be formed in an air gap as the Office Action alleges. The Gold air gaps (308) therefore cannot be fairly characterized as the recited nonmagnetic layer of a monolithic core structure.

Finally, claim 1 recites that “at least one nonmagnetic layer separates said conductive element from one of the magnetic layers.” Gold discloses no such thing. The conductive winding (304) of Gold is surrounded by insulation (310) that is not part of a monolithic structure of the core (300), and the air gaps (300) are likewise not a monolithic part of the core. Additionally, an air gap is submitted to be incapable of separating one part from another.

Claim 1 is therefore submitted to be patentable over Gold.

Claims 2-7 depend from independent claim 1, and when the recitations of claims 2-10 are considered in combination with the recitations of claim 1, claims 2-7 are likewise submitted to be patentable over Gold.

Notwithstanding the above, claim 3 recites that the conductive element is formed on a surface of the core structure. Gold does not disclose this, but rather states that "any conductor form, such as tapes, wires or cables, may be used to form the windings." *See* col. 8, lines 34-36. Applicant notes that tapes, wires and cables would each be formed independently of the core structure, and none of them would be formed on a surface of the core structure as claim 3 recites.

The Office Action cites the Gold air gap (308) as defining a first side of opening as recited in claim 4. It is respectfully submitted that an air gap cannot define an opening and the Gold air gaps (308) do not meet the recitations of claim 4.

The Office Action cites element (310) of Gold as the magnetic layers recited in claim 5. This is respectfully submitted to be inconsistent with the rejection of claim 1 that cites the air gaps (308) as the recited nonmagnetic layer. Additionally, Gold describes that insulation (310) is preferably a solid insulator made from a material (314) selected for superior properties at cryogenic temperatures, and "must be machinable so that fine slots and holes to contain the superconductors can be provided." The insulation (310) is "preassembled [to the superconductors] before insertion into the core". *See* col. 7, lines 55-58. It is therefore apparent that, as illustrated in Figure 4, the insulation (310) is part of the winding (304) and not part of the core (300). The insulation therefore does not meet the recitations of claim 5. For similar reasons, the insulation (310) does not meet the recitations of claims 9-11 as it is not monolithically formed with the core pieces.

The insulation (310) described by Gold separates the winding (304) from the core pieces so that, contrary to the assertion otherwise in the Office Action, the recitations of

claim 7 reciting that the conductive element extends upon the nonmagnetic layer are not satisfied, and neither are the recitations of claim 12 wherein the conductive element is in contact with and supported by the nonmagnetic layer.

The recitations of claims 8 and 9 are not disclosed by Gold, as the Gold core (300) includes separate pieces (312), (314), (316), (318) and not a monolithic structure.

Claim 15 recites a magnetic component comprising “a monolithic core comprising a first core structure and a second core structure separated by an insulating layer, each of said first and second core structures comprising a plurality of magnetic layers, at least one nonmagnetic layer separating one of said plurality of magnetic layers from another of said plurality of magnetic layers, and an opening extending therethrough for passage of a conductive element.”

For similar reasons to claim 1, the structure of claim 15 is neither disclosed nor suggested by Gold. Additionally, claim 15 recites a monolithic core comprising a first core structure and a second core structure separated by an insulating layer. As noted above, Gold does not describe a monolithic structure at all, and the Gold insulation (310) is part of the winding (304) and not part of the core pieces. Claim 15 is therefore submitted to be patentable over Gold.

Claims 16-20 depend from independent claim 15, and when the recitations of claims 16-20 are considered in combination with the recitations of claim 15, claims 16-20 are likewise submitted to be patentable over Gold.


Applicants therefore respectfully request the rejection of claims 1-20 be withdrawn.

In view of the foregoing remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

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Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Bruce T. Atkins", is written over a horizontal line.

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